



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s): Arto Palin

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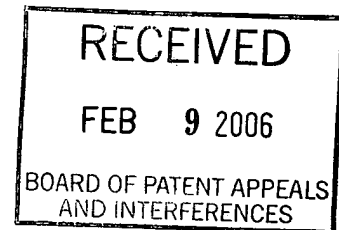
EXAMINER: Jamal,
Alexander

TITLE: ACCELERATING A SET-UP PROCEDURE FOR WIRELESS
CONNECTIONS BETWEEN DEVICES

ATTORNEY

DOCKET NO.: 810-010628-US(PAR)

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450



APPELLANTS' BRIEF

This is an appeal from the final rejection (dated July 12, 2005) of the claims in the above-identified application. A Notice of Appeal was mailed on December 9, 2005.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is: NOKIA MOBILE PHONES LTD. of Espoo, Finland.

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II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences regarding this application.

III. STATUS OF CLAIMS

Claims 1-20 are pending in the application.

Claims 1-20 have been finally rejected.

The claims on appeal are claims 1-20.

IV. STATUS OF AMENDMENTS

An interview was conducted with the examiner on September 8, 2005, followed by the filing of a response to the Final Rejection without amendment of the claims, the response providing a report on the interview and an argument showing patentability of the claims. Thereafter, an Advisory Action (dated November 10, 2005) issued maintaining the rejections of the claims, and providing a new ground of rejection on page 2 of the Advisory Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

With reference to the present specification and drawing figures, the present invention relates to a method (claim 1) for accelerating a set-up procedure for wireless connections between at least two devices, and also to a device (claim 14) suited for establishing a wireless connection to at least one other device, as well as to a communications system (claim 17) for establishing a wireless connection between a first device of the system and another device.

A procedure followed by the invention is initiated by an inquiry message, which message is received twice at a first device upon transmission from a second device, wherein a back-off time is inserted between the two transmissions. This avoids a conflict (specification at page 3, line 6) when several devices are responding to an inquiry message. The invention provides for an improvement of the back-off procedure wherein (beginning on page 5 at line 24) there is a measurement of received power level. Then, in accordance with an important feature of the invention, a maximum amount of the back-off time is established based on the measured power level. The thus obtained variable amount of back-off time accelerates the set-up procedure.

With reference to the drawing, Fig. 1 provides an example of a plurality of devices, herein electronic payment devices 11-13, which may be constructed as mobile phones, that are to communicate electronically with an electronic cashier 10. Measured values of signal strength (RSSI) are employed to establish a maximum value of a random number used to provide a length of back-up interval as depicted in the chart of Fig. 2.

Fig. 3, in conjunction with the text of page 16, beginning at line 5, presents the concept of a gap between the numbers representing durations of possible back-off intervals. Fig. 4 depicts a chart presenting timing values of the Frequency Hop Synchronization (FHS) packet (disclosed on page 3 at line 4, and on page 17 in the bottom paragraph) produced in the practice of the invention.

In claim 14 and also in claim 17, the scanning means finds support in the specification on page 11 at lines 5-20 wherein a BluetoothTM unit (line 10) performs a scanning. The measuring means finds support in the specification in the paragraph linking pages 11-12 wherein the cashier 10 is said to measure RSSI. The processing means finds support in the specification on page 12 at lines 5, 9, 16, and 21.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are treated in this appeal.

1. Whether Claims 1-7, 14-18 and 20 should be rejected under 35 U.S.C. 103 as being unpatentable over Applicant's specification (pages 1-4) in view of Marsan (US 6564068) and further in view of Chuah (US 6400695) for reasons set forth in Point 4 of the Final Office Action.

2. Whether Claims 8-12 and 19 should be rejected under 35 U.S.C. 103 as being unpatentable over Applicant's specification (pages 1-4) in view of Marsan (US 6564068) and further in view of Chuah (US 6400695) for reasons set forth in Point 5 of the Final Office Action.
3. Whether Claim 13 should be rejected under 35 U.S.C. 103 as being unpatentable over Applicant's specification (pages 1-4) in view of Marsan (US 6564068), Chuah (US 6400695), and further in view of Blatherwick (US 6269395) for reasons set forth in Point 6 the Final Office Action.
4. Whether there is motivation to combine the teachings of Chuah and Marsan as set forth in the Advisory Action (page 2) dated November 10, 2005.

VII. ARGUMENT

In the Final Office Action, claims 1-7, 14-18 and 20, and also claims 8-12 and 19 were rejected under 35 U.S.C. 103 as being unpatentable over the present specification (pages 1-4) in view of Marsan (US 6564068) and Chuah (US 6400695) for reasons set forth in the Action. Claim 13 was rejected under 35 U.S.C. 103 as being unpatentable over the present specification (pages 1-4) in view of Marsan (US 6564068), Chuah (US 6400695), and Blatherwick (US 6269395) for reasons set forth in the Action.

The following argument is presented to overcome the grounds of rejection raised by the examiner, and to show the presence of allowable subject matter in the claims.

FIRST ISSUE OF WHETHER CLAIMS 1-7, 14-18 AND 20 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE.

These claims were rejected upon the combination of teachings from three different references, namely, Applicant's specification (pages 1-4) in view of Marsan (US 6564068) and further in view of Chuah (US 6400695) for reasons set forth in Point 4 of the Final Office Action.

It is urged that hindsight is employed in the combination of these references and that, in the absence of prior knowledge of the present invention, one having skill in this art would not be motivated to combine the foregoing references to render the invention as being unpatentable.

According to the Manual of Patent Examining Procedure (MPEP, Section 2100, more specifically 2143), the mere fact that the references can be combined does not render the invention obvious. Rather, there must be some teaching of the invention that would motivate the combination of the references. There is no overriding teaching that would motivate the combination of the references applied by the examiner. The intent of the invention, as set forth on page 6 of the present specification (middle of the page), is that the invention reduces the average time required to establish a connection in a Bluetooth type of system. The intent of Marsan is to find a transmission path of

highest signal level. The intent of Chuah is to reduce access time to a communication system for those components handling the highest priority messages. There is no common theme or concept that would motivate a person to combine the teachings of the cited art to produce the present invention.

The present invention provides the advantage of reducing the average time required to establish a connection in a BluetoothTM type of system. The establishment of a connection is accomplished by use of an interval of back-off delays, prior to attempting a communication, in order to avoid collisions among communications of the various devices that constitute the system. Each of the devices may perform a scanning for inquiries from other ones of the devices (present specification, page 2, bottom paragraph). In order to avoid a conflict when several devices are responding to an inquiry message at the same time, or when several devices are inquiring at the same time, randomized back-off times are provided (present specification at page 3). The back-off interval with the randomizing of back-off delays by components of the system, before attempting to communicate, is an attempt to avoid collisions.

Against this background, the present invention attempts to reduce a long setup time associated with the setup process (present specification at page 5, lines 7-12), the long setup time being a problem of the prior art, as discussed at the top of Page 4 of the present specification.

Marsan provides a teaching directed to the goal of finding a transmission path of highest signal level in the situation wherein various transmission paths are available. This reference

does not deal with the issue of reducing the time to set up a communication link. The examiner observes (middle of page 3 of the Action) that Marsan teaches that received signal strength indication (RSSI) may be used to assign priorities. But there is no teaching that this is useful in reducing the time to set up a communication link. Marsan only teaches, for the purposes of the present invention, that RSSI is useful in cellular phone networks, but says nothing about obtaining the goal of the present invention, namely, to reduce the time to set up a communication link.

Chuah presents a teaching directed to reduction of access time to a communication system based on priorities previously designated for components of the communication system, such that the access time is reduced for those components having the highest priority in the nature of the messages to be communicated. But Chuah fails to address the situation, treated by the present invention, wherein there are no pre-assigned priorities. Also Chuah fails to address the situation, treated by the present invention, wherein one is not concerned about specific high priority messages of specific system components as treated by Chuah, but wherein the concern is for reduction of the average set up time for communications of respective ones of all the components of the system.

Upon viewing the foregoing teachings of Marsan and Chuah, it is apparent that there is nothing in Marsan and Chuah, considered individually or in combination, that would direct an inventor to consider their teachings in combination with the previously known characteristics of a BluetoothTM system to construct the present invention. Clearly, there is nothing in their teachings

to motivate one to use their system features in combination with Bluetooth™ to produce the present invention because of the complete absence of any indication that such an attempted combination of system features would lead to a reduction in average setup time to establish a communication link. Also, it appears that the examiner is using hindsight (bottom paragraph of page 3 of the Office Action) when he reconstructs the Chuah system to base the priorities on signal strength, so as to build the present invention. Accordingly, as noted above, there is no common theme or concept that would motivate a person to combine the teachings of art selected by the examiner to produce the present invention.

SECOND ISSUE OF WHETHER CLAIMS 8-12 AND 19 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE.

In the rejection of these claims, the examiner combines the teachings of the Applicant's specification with the teachings of Marsan and Chuah in substantially the same manner as in the rejection of the claims described above in reference to the First Issue. The examiner notes that RSSI measurements are made to assign priority. The examiner goes on to state that (middle of page 5 of the Office Action) that it would be obvious to employ another parameter, such as pathloss to provide a ranking based on the quality of the received signal.

But, as noted above in the discussion of the First Issue, the examiner misses the point that the present invention is not based on a choice of priority but, rather, is directed to influencing the statistical behavior in the selection of a random number designating an amount of back-off time interval to

minimize the time of the set-up procedure for wireless connections between devices that are to communicate with each other. A reading of each of the cited references does not provide any indication of the statistical situation under consideration so that, upon an attempted combination of the respective teachings of the three references, it becomes apparent that there is no motivation to combine these three references, nor is there any suggestion in a combination of the teachings of the beneficial result obtained by the practice of the present invention.

Therefore, it is believed that grounds upon which the examiner relies does not support the rejection, and the rejection should be withdrawn.

THIRD ISSUE OF WHETHER CLAIM 13 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE.

The rejection of claim 13 (Point 6 of the Office Action) applies the combination of the same three references as in the rejection of claim 1, along with the teaching of Blatherwick. Blatherwick is used to teach the implementation of a display to present a list of devices responding to inquiry messages. However, the additional information provided by Blatherwick does not resolve the matter referred to above wherein the cited art does not suggest how to influence the statistical behavior for the selection of a random number designating an amount of back-off time interval to accelerating the time of the set-up procedure for wireless connections between devices that are to communicate with each other. Thus, here too, there is no motivation to

combine references, and the grounds used for rejection of claim 13 does not support the rejection.

FOURTH ISSUE OF WHETHER THERE IS MOTIVATION TO COMBINE THE TEACHINGS OF CHUAH AND MARSAN.

The issue of combining Chuah with Marsan (page 2 of the Advisory Action) has importance in the rejection of each of the claims. The examiner states that both Chuah and Marsan are concerned with creating a more efficient handshaking procedure. The examiner then concludes that since the higher signal strength of Marsan should act to decrease overall setup time, and since Chuah intends to reduce access time to a communications system, then there would be motivation to combine their teachings for the purpose of constructing the present invention, this showing that the present invention is unpatentable in conjunction with the cited teaching from Applicant's specification.

The examiner may be right in that the signal strength considerations of Marsan and the intent of Chuah to reduce access time might induce a practitioner of this art to read the references to improve the BluetoothTM system setup time. But there is nothing in the respective teachings of these references that would indicate how the probability in the operation of the randomized length of back-off interval in the BluetoothTM system can be altered to reduce the setup time. For this reason, there is no motivation to combine the references.

OBSERVATIONS APPLICABLE TO ALL FOUR ISSUES

The present invention provides the advantage of reducing the average time required to establish a connection in a Bluetooth™ type of system. The establishment of a connection is accomplished by use of an interval of back-off delays, prior to attempting a communication, in order to avoid collisions among communications of the various devices that constitute the system. Each of the devices may perform a scanning for inquiries from other ones of the devices (present specification, page 2, bottom paragraph). In order to avoid a conflict when several devices are responding to an inquiry message at the same time, or when several devices are inquiring at the same time, randomized back-off times are provided (present specification at page 3). The back-off interval with the randomizing of back-off delays by components of the system, before attempting to communicate, is an attempt to avoid collisions.

Against this background, the present invention attempts to reduce a long setup time associated with the setup process (present specification at page 5, lines 7-12), the long setup time being a problem of the prior art, as discussed at the top of Page 4 of the present specification.

Marsan provides a teaching directed to the goal of finding a transmission path of highest signal level in the situation wherein various transmission paths are available. This reference does not deal with the issue of reducing the time to set up a communication link. The examiner observes (middle of page 3 of the Action) that Marsan teaches that received signal strength indication (RSSI) may be used to assign priorities. But there is no teaching that this is useful in reducing the time to set up a communication link. Marsan only teaches, for the purposes of the

present invention, that RSSI is useful in cellular phone networks, but says nothing about obtaining the goal of the present invention, namely, to reduce the time to set up a communication link.

Chuah presents a teaching directed to reduction of access time to a communication system based on priorities previously designated for components of the communication system, such that the access time is reduced for those components having the highest priority in the nature of the messages to be communicated. But Chuah fails to address the situation, treated by the present invention, wherein there are no pre-assigned priorities. Also Chuah fails to address the situation, treated by the present invention, wherein one is not concerned about specific high priority messages of specific system components as treated by Chuah, but wherein the concern is for reduction of the average set up time for communications of respective ones of all the components of the system.

Upon viewing the foregoing teachings of Marsan and Chuah, it is apparent that there is nothing in Marsan and Chuah, considered individually or in combination, that would direct an inventor to consider their teachings in combination with the previously known characteristics of a Bluetooth™ system to construct the present invention. Clearly, there is nothing in their teachings to motivate one to use their system features in combination with Bluetooth™ to produce the present invention because of the complete absence of any indication that such an attempted combination of system features would lead to a reduction in average setup time to establish a communication link. Also, it appears that the examiner is using hindsight (bottom paragraph

of page 3 of the Office Action) when he reconstructs the Chuah system to base the priorities on signal strength, so as to build the present invention. Accordingly, as noted above, there is no common theme or concept that would motivate a person to combine the teachings of art selected by the examiner to produce the present invention.

It is urged furthermore that a person skilled in the art would not have combined the three references as argued by the examiner, for the following reasons:

1) The BluetoothTM specification relates specifically to BluetoothTM connections, the Marsan reference to a network, in which several base sites with overlapping coverage areas are managed by a communication infrastructure equipment, and the Chuah reference relates to UMTS. A person is either skilled in the field of Bluetooth or in the field of cellular networks, but not in both. Therefore, a person proceeding from the Bluetooth specification and trying to improve a problem specific to the establishment of Bluetooth connections (herein the reducing of the time required for an inquiry procedure between two or more devices that wish to establish a wireless connection) would not consider documents relating to completely different systems, like cellular systems, for solving the problem, as the technical requirements are quite different. At the most, he would consider other technologies known for ad-hoc network.

2) The Marsan reference does not deal at all with the problem of collisions, which is the reason for the repeated scanning of inquiry messages in claim 1. Also for this reason, it would not be considered by a skilled person. Further, in the Marsan

reference, the network evaluates RSSI measurements performed by another device (i.e. a terminal) in order to determine its further action (namely select a base station and provide a service via the selected base station).

3) In the Chuah reference, the indicated back-off delay is not comparable to the back-off time of claim 1. In the Chuah reference, the action after a back-off delay is a re-transmission of a request, not a repeated scanning for an incoming request. Further, there is no automatic action after a back-off delay. Rather, a re-transmission is only carried out in case a first request was not successful. That is, collisions are not avoided but dealt with by means of a re-transmission. Simply because the term "back-off delay" is used, there is no reason that a skilled person would consider this document. Further, the considered priority is indicated in the Chuah reference to depend on a classification of a request or of a terminal. Thus, a skilled person receives no hint that the priority could be based on measurement results. When considering the Marsan reference and the Chuah reference, a skilled person would thus, at the most, compare the explicit reference to a priority, such as a priority to establish some base sites as more attractive alternate, in the Marsan reference to the priority used in the Chuah reference for determining the range for the back-off delay.

On the whole, it becomes apparent that there would have been too many obstacles in combining the features of the three documents for reaching the method of claim 1.

Independent claims 14 and 17 comprise features corresponding to the features of the method of claim 1. Thus, the analysis applied to claim 1 is valid for claims 14 and 17.

CONCLUSION

In conclusion, it is noted that an important aspect of the present invention is the recognition by the present inventor that the collision avoidance procedure of the Bluetooth™ system is based on the selection of a relatively large back-off time, and that the present invention has found a way of decreasing the back-off time in accordance with received power level of a detected inquiry message. There is no suggestion in the references of the cited art, considered individually or in combination, that one could avoid collisions with a smaller back-off time by relating the back-off time to signal strength. This aspect of the present invention is set forth in the independent claims, and serves to distinguish the invention from the cited art, so as to overcome the foregoing rejections and present allowable subject matter in the claims.

Accordingly, it is urged that the arguments presented herein have overcome the grounds of rejection to show the presence of allowable subject matter in the claims. It is requested respectfully that the BOARD OF PATENT APPEALS AND INTERFERENCES reconsider the foregoing grounds of rejection under 35 U.S.C. 103, and find the present claims to be allowable.

The appendix of claims is attached hereto.

VIII. CLAIMS APPENDIX

The texts of the claims involved in the appeal are:

1. A method for accelerating a set-up procedure for wireless connections between at least two devices, which set-up procedure requires a first device to receive an inquiry message initiating said procedure from a second device twice with a back-off time in between before responding to said second device, said method comprising for said first device:

- scanning for inquiry messages;
- measuring a value of a parameter associated to a detected inquiry message indicative of the received power level of said detected inquiry message;
- determining at least a maximum number as a function of said measured value;
- generating a random number within a number space limited by said determined maximum number; and
- scanning again for said detected inquiry message after a back-off time, the length of said back-off time is related to said generated random number.

2. The method of claim 1, wherein determining said maximum number as a function of said measured value comprises

determining said number space defined by a maximum number and a minimum number as a function of said measured value.

3. The method of claim 1, wherein said maximum number is determined for said detected inquiry message as a function of a received signal strength indicator (RSSI), said RSSI is measured as value of a parameter indicative of said received power level of said detected inquiry message.

4. The method of claim 3, wherein the lower said measured RSSI of a detected inquiry message is, the higher said maximum number is set.

5. The method of claim 3, wherein the same maximum number is assigned to each RSSI belonging to a group defined by a predetermined range of RSSI values.

6. The method of claim 3, wherein determining said maximum number for a detected inquiry message as a function of a received signal strength indicator (RSSI) comprises determining said number space defined by a maximum number and a minimum number as a function of said RSSI, and wherein the lower said measured RSSI of a detected inquiry message is, the higher said number space is set.

7. The method of claim 3, wherein determining said maximum number for a detected inquiry message as a function of a received signal strength indicator (RSSI) comprises determining said number space defined by a maximum number and a minimum number as a function of said RSSI, and wherein the same number space is assigned to each RSSI belonging to a group defined by a predetermined range of RSSI values.

8. The method of claim 1, wherein said detected inquiry message comprises an indication of a transmission power level employed by said second device for transmitting said detected inquiry message, and wherein said maximum number is determined as a function of the pathloss of said detected inquiry message, said pathloss is calculated from said transmission power level

and said measured value of a parameter indicative of said received power level of said detected inquiry message.

9. The method of claim 8, wherein the lower said received power level of said detected inquiry message is, the higher said maximum number is set.

10. The method of claim 8, wherein the same maximum number is assigned to each pathloss belonging to a group defined by a predetermined range of values for said pathloss.

11. The method of claim 8, wherein determining said maximum number as a function of said pathloss of said detected inquiry message comprises determining said number space defined by a maximum number and a minimum number as a function of said pathloss, and wherein the higher said measured path loss of a detected inquiry message is, the higher said number space is set.

12. The method of claim 8, wherein determining said maximum number as a function of said pathloss of said detected inquiry message comprises determining said number space defined by a maximum number and a minimum number as a function of said pathloss, and wherein the same number space is assigned to each pathloss belonging to a group defined by a predetermined range of values for said pathloss.

13. The method of claim 1, wherein to a user of said second device sending out inquiry messages, a list of first devices responding to said inquiry messages is presented, said list includes an indication of the order in which said first devices responded to said inquiry message by said second device.

14. A device suited for establishing a wireless connection to at least one other device comprising:

- scanning means for scanning for inquiry messages transmitted by other devices via an air interface;
- measuring means for measuring a value of a parameter associated to a detected inquiry message indicative of the received power level of said detected inquiry message; and
- processing means for determining at least a maximum number as a function of said measured value, for generating a

random number within a number space limited by said determined maximum number, and for determining a back-off time of which the length corresponds to said generated random number, wherein said scanning means are only allowed to scan again for said detected inquiry message after said back-off time.

15. The device of claim 14, wherein determining at least a maximum number as a function of said measured value by said processing means comprises determining said number space defined by a maximum number and a minimum number as a function of said measured value.

16. The device of claim 14, wherein said device is a BluetoothTM device.

17. A communications system comprising at least a first device with means for transmitting inquiry messages via an air interface for establishing a wireless connection with another device, and at least a second device with:

- scanning means for scanning for inquiry messages transmitted by other devices via an air interface;

- measuring means for measuring a value of a parameter associated to a detected inquiry message indicative of the received power level of said detected inquiry message; and
- processing means for determining at least a maximum number as a function of said measured value, for generating a random number within a number space limited by said determined maximum number, and for determining a back-off time of which the length corresponds to said generated random number, wherein said scanning means are only allowed to scan again for said detected inquiry message after said back-off time.

18. The communications system of claim 17, wherein determining at least a maximum number as a function of said measured value by said processing means of said at least second device comprises determining said number space defined by a maximum number and a minimum number as a function of said measured value.

19. The communications system of claim 17, wherein the processing means of devices of said communications system without capabilities for measuring received power levels employ a fixed maximum number limiting a number space within which a random number is generated in order to determine a corresponding back-off time.

20. The communications system of claim 17, wherein said communications system is a BluetoothTM communications system.

IX. EVIDENCE APPENDIX

There is no evidence appendix.

X. RELATED PROCEEDINGS APPENDIX

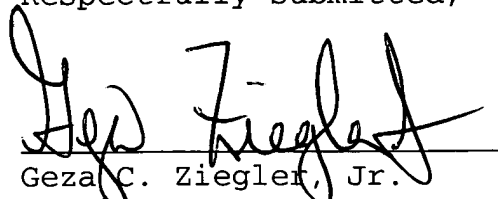
There is no related proceedings appendix.

XI CERTIFICATE OF SERVICE

There is no certificate of service.

A check in the amount of \$500.00 is enclosed herewith for the appeal brief fee. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


Geza C. Ziegler, Jr.
Reg. No.: 44,004

7 FEB 2006
Date

Perman & Green, LLP
425 Post Road
Fairfield, CT 06824
(203) 259-1800
Customer No.: 2512

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